

Appl. No. 10/696,715

Amdt. Dated 3/16/2006

Response to Office action dated 12/16/2005

### **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

Claim 1 (Currently amended): A battery control circuit ~~having a battery voltage detecting section for detecting a voltage of a battery~~ comprising:

a battery voltage detecting section for detecting a voltage of a battery

a resistor and a switching element connected in series being connected to said battery in parallel; and

a battery controlling section for acquiring information relating to a change ~~in~~ between the voltage of said battery detected by said battery voltage detecting section when said switching element is ON and the voltage of said battery detected by said battery voltage detecting section when said switching element is OFF by turning on said switching element to allow a current of said battery to flow through said resistor and by turning off said switching element, the voltage being detected by said battery voltage detecting section;

wherein said battery controlling section determines a residual capacity of said battery based on the information relating to the change in the voltage of said battery.

Claim 2 (Currently amended): The battery control circuit according to claim 1,

wherein said battery voltage detecting section comprises first and second voltage-dividing resistors connected in series, and

said first and second voltage-dividing resistors are connected to said ~~battery~~ resistor and said switching element in parallel, and a voltage at a connection point between said first and said second voltage-dividing resistors is detected as the voltage of said battery.

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Claim 3 (Currently amended): The battery control circuit according to claim 1,

wherein the information relating to the change ~~in the voltage of said battery~~ is a change amount ~~of~~ between the voltage of said battery detected by said battery voltage detecting section when said switching element is OFF and the voltage of said battery detected by said battery voltage detecting section when said switching element is ON, the change amount being detected by said ~~battery voltage detecting section when said switching element is turned on.~~

Claim 4 (Currently amended): The battery control circuit according to claim 1, further comprising:

a voltage recovery time measurement section for measuring a time period from a time when said switching element is turned off to a time when the voltage of the battery, ~~which is detected by said battery control circuit in a state where said switching element is ON,~~ detected by said battery voltage detecting section recovers to a predetermined voltage value,

wherein the information relating to the change ~~in the voltage of said battery~~ is said time period measured by said voltage recovery time measurement section.

Claim 5 (Currently amended): The battery control circuit according to claim 1, further comprising:

a storing section for storing characteristics information ~~relating to~~ of relation between the information relating to the change and said residual capacity of said battery,

wherein said battery ~~voltage detecting~~ controlling section refers to said characteristic information in said storing section to determine the residual capacity of said battery based on the information relating to the change ~~in the voltage of said battery.~~

Claim 6 (Currently amended): The battery control circuit according to claim 2,

wherein the information relating to the change ~~in the voltage of said battery~~ is a change amount ~~of~~ between the voltage of said battery detected by said battery voltage detecting section when said switching element is OFF and the voltage of said battery detected by said battery voltage

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~~detecting section when said switching element is ON, the change amount being detected by said battery voltage detecting section when said switching element is turned on.~~

Claim 7 (Currently amended): The battery control circuit according to claim 2, further comprising:

a voltage recovery time measurement section for measuring a time period from a time when said switching element is turned off to a time when the voltage of the battery, ~~which is detected by said battery control circuit in a state where said switching element is ON,~~ detected by said battery voltage detecting section recovers to a predetermined voltage value,

wherein the information relating to the change ~~in the voltage of said battery~~ is said time period measured by said voltage recovery time measurement section.

Claim 8 (Currently amended): The battery control circuit according to claim 2, further comprising:

a storing section for storing characteristic information ~~relating to~~ of relation between the information relating to the change and said residual capacity of said battery,

wherein said battery ~~voltage detecting~~ controlling section refers to said characteristic information in said storing section to determine the residual capacity of said battery based on the information relating to the change ~~in the voltage of said battery~~.

Claim 9 (Currently amended): The battery control circuit according to claim 3, further comprising:

a voltage recovery time measurement section for measuring a time period from time when said switching element is turned off to time when the voltage of the battery, ~~which is detected by said battery control circuit in a state where said switching element is ON,~~ detected by said battery voltage detecting section recovers to a predetermined voltage value,

wherein the information relating to the change ~~in the voltage of said battery~~ is said time period measured by said voltage recovery time measurement section.

Claim 10 (Currently amended): The battery control circuit according to claim 3, further comprising:

a storing section for storing characteristic information ~~relating to~~ of relation between the change amount and said residual capacity of said battery,

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wherein said battery ~~voltage-detecting~~ controlling section refers to said characteristic information in said storing section to determine the residual capacity of said battery based on the information relating to the change ~~in the voltage of said battery~~.

Claim 11 (Currently amended): The battery control circuit according to claim 4, further comprising:  
a storing section for storing characteristic information ~~relating to~~ of relation between the time period and said residual capacity of said battery,

wherein said battery ~~voltage-detecting~~ controlling section refers to said characteristic information in said storing section to determine the residual capacity of said battery based on the information relating to the change ~~in the voltage of said battery~~.

Claim 12 (Currently amended): The battery control circuit according to claim 6, further comprising:  
a voltage recovery time measurement section for measuring a time period from time when said switching element is turned off to time when the voltage of the battery, ~~which is detected by said battery control circuit in a state where said switching element is ON, detected by said battery voltage~~ detecting section recovers to a predetermined voltage value,

wherein the information relating to the change ~~in the voltage of said battery~~ is said time period measured by said voltage recovery time measurement section.

Claim 13 (Currently amended): The battery control circuit according to claim 6, further comprising:  
a storing section for storing characteristic information ~~relating to~~ of relation between the information relating to the change and said residual capacity of said battery,

wherein said battery ~~voltage-detecting~~ controlling section refers to said characteristic information in said storing section to determine the residual capacity of said battery based on the information relating to the change ~~in the voltage of said battery~~.

Claim 14 (Currently amended): The battery control circuit according to claim 12, further comprising:

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a storing section for storing characteristic information of relation between the information relating to the change and said residual capacity of said battery,

wherein said battery ~~voltage-detecting~~ controlling section refers to said characteristic information in said storing section to determine the residual capacity of said battery based on the information relating to the change ~~in the voltage of said battery~~.

Claim 15 (Original): An electronic device comprising:

the battery control circuit according to any one of claims 1 to 14,  
wherein operating power is supplied from said battery.

Claim 16 (Currently amended): The electronic device according to claim 15,

wherein ~~a component consuming power based on said operating power is~~ said resistor is an actually operating load of the electronic device.